Amendment

(under PCT Article 11)

To: Commissioner of the Patent Office

1. International Application No. PCT/JP2004/003539

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4. Object of Amendment: Claims

5. Contents of Amendment

   (1) Claim 1 is amended to new claim 1 comprising contents of claim 6.

   (2) Claim 3 is cancelled.

   (3) Claim 4 is amended to new Claim 4 comprising contents of the original Claim 1 and Claim 9.

   (4) Claims 13 and 14 are added.

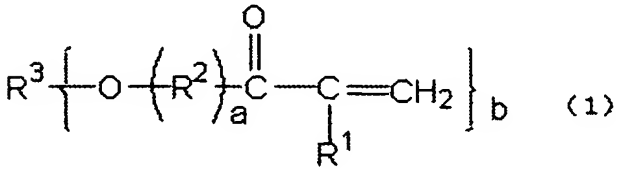
6. List of Attachment

   Pages 41, 42, 42/1 and 44 of Claims (corresponding to pages 49, 50, 50/1, 51, 52 and 52/1 of English translation of Claims)

CLAIMS

1. (Amended) A photochromic lens substrate, which comprises a cured product of a polymerization curable composition comprising:

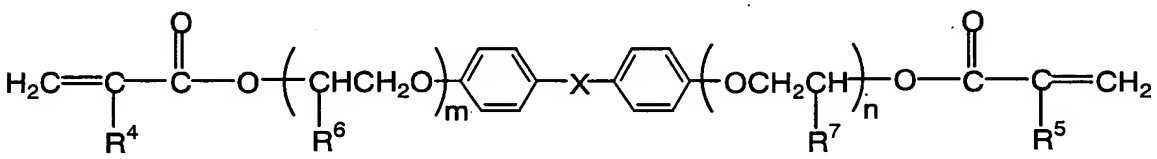
(I) a polyfunctional polymerizable monomer represented by the following formula (1):



(1)

wherein R^1 is a hydrogen atom or methyl group, the group $-R^2-$ is $-CH_2CH_2O-$, $-CH_2CH(CH_3)O-$ or $-C(=O)CH_2CH_2CH_2CH_2CH_2O-$, R^3 is a trivalent to hexafunctional organic residue, a is an integer of 0 to 3 and b is an integer of 3 to 6;

(II) a bifunctional polymerizable monomer represented by the following formula (2):



...(2)

wherein R^4 and R^5 are each independently a hydrogen atom or methyl group, R^6 and R^7 are each independently a hydrogen atom or alkyl group having 1 or 2 carbon atoms, the group -X- is $-O-$, $-S-$, $-S(=O)_2-$, $-C(=O)-O-$, $-CH_2-$, $-CH=CH-$ or $-C(CH_3)_2-$, and m and n satisfy (m + n) = 0 to 30; and

(III) other polymerizable monomer different than the above polymerizable monomers (I) and (II);

(IV) a photochromic compound; and

(V) a thermal polymerization initiator, wherein

the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and

the other polymerizable monomer (III) are 1 to 15 wt%, 10 to 80 wt% and 5 to 89 wt% based on the total of all the polymerizable monomers, respectively, the fading half-life period of the photochromic compound (III) in the cured product is 30 times or less shorter than the fading half-life period of the photochromic compound (III) in the polymerization curable composition, and the substrate has a tensile strength of 20 Kgf or more.

2. The lens substrate according to claim 1, wherein the bifunctional polymerizable monomer (II) is a combination of a first bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 0 to 5 and a second bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 6 to 30, and the molar amount of the second bifunctional polymerizable monomer is 3 times or less larger than that of the first bifunctional polymerizable monomer.

3. (Deleted)

4. (Amended) A photochromic lens substrate composed of a cured product of a polymerization curable composition comprising:

(I) a polyfunctional polymerizable monomer represented by the above formula (1);

(II) a bifunctional polymerizable monomer represented by the above formula (2);

(III) other polymerizable monomer different from the above polymerizable monomers (I) and (II);

(IV) a photochromic compound; and

(V) a photopolymerization initiator, wherein

the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and

the other polymerizable monomer (III) are 1 to 60 wt%, 10 to 90 wt% and 0 to 89 wt% based on the total of all the polymerizable monomers, respectively, the fading half-life period of the photochromic compound (III) in the cured product is 30 times or less shorter than the fading half-life period of the photochromic compound (III) in the polymerization curable composition, and the substrate has a tensile strength of 20 Kgf or more.

5. The lens substrate according to claim 4, wherein the polymerization curable composition further comprises at least one oligomer selected from the group consisting of bifunctional to hexafunctional polymerizable urethane oligomers and bifunctional to hexafunctional polyester oligomers.

6. A polymerization curable composition comprising:

(I) a polyfunctional polymerizable monomer represented by the above formula (1);

(II) a bifunctional polymerizable monomer represented by the above formula (2);

(III) other polymerizable monomer different from the above polymerizbale monomers (I) and (II);

(IV) a photochromic compound; and

(V) a thermopolymerization initiator, wherein

the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 1 to 15 wt%, 10 to 80 wt% and 5 to 89 wt% based on the total of all the polymerizable monomers, respectively.

7. The composition according to claim 6, wherein the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 3 to 10 wt%, 20 to 60 wt% and 30 to 77 wt%, respectively.

8. The composition according to claim 6, wherein the bifunctional polymerizable monomer (II) is a combination of a first bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 0 to 5 and a second bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 6 to 30, and the molar amount of the second bifunctional polymerizable monomer is 3 times or less larger than that of the first bifunctional polymerizable monomer.

9. A polymerization curable composition comprising:

(I) a polyfunctional polymerizable monomer represented by the above formula (1);

(II) a bifunctional polymerizable monomer represented by the above formula (2);

(III) optionally, other polymerizable monomer different from the above polymerizbale monomers (I) and (II);

(IV) a photochromic compound; and

(V) a photopolymerization initiator, wherein

the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 1 to 60 wt%, 10 to 90 wt% and 0 to 89 wt% based on the total of all the polymerizable monomers, respectively.

10. The composition according to claim 9, wherein the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 10 to 60 wt%, 20 to 90 wt% and 0 to 70 wt%, respectively.

11. The composition according to claim 9, wherein the bifunctional polymerizable monomer (II) is a combination of a first bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 0 to 5 and a second bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 6 to 30, and the molar amount of the second bifunctional polymerizable monomer is 3 times or less larger than that of the first bifunctional polymerizable monomer.

12. A photochromic lens which comprises the photochromic lens substrate of claim 1, a hard coat layer and a buffer layer, said buffer layer being interposed between the hard coat layer and the substrate and having lower pencil hardness than the hard coat layer, for bonding the substrate to the hard coat layer.

13. (Added) The lens substrate according to claim 4,

wherein the bifunctional polymerizable monomer (II) is a combination of a first bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 0 to 5 and a second bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 6 to 30, and the molar amount of the second bifunctional polymerizable monomer is 3 times or less larger than that of the first bifunctional polymerizable monomer.

14. (Added) A photochromic lens comprising the photochromic lens substrate of claim 4, a hard coat layer and a buffer layer, interposed between the hard coat layer and the substrate and having lower pencil hardness than the hard coat layer, for bonding the substrate to the hard coat layer.